

(19) World Intellectual Property
Organization
International Bureau



COPY



(43) International Publication Date
1 July 2004 (01.07.2004)

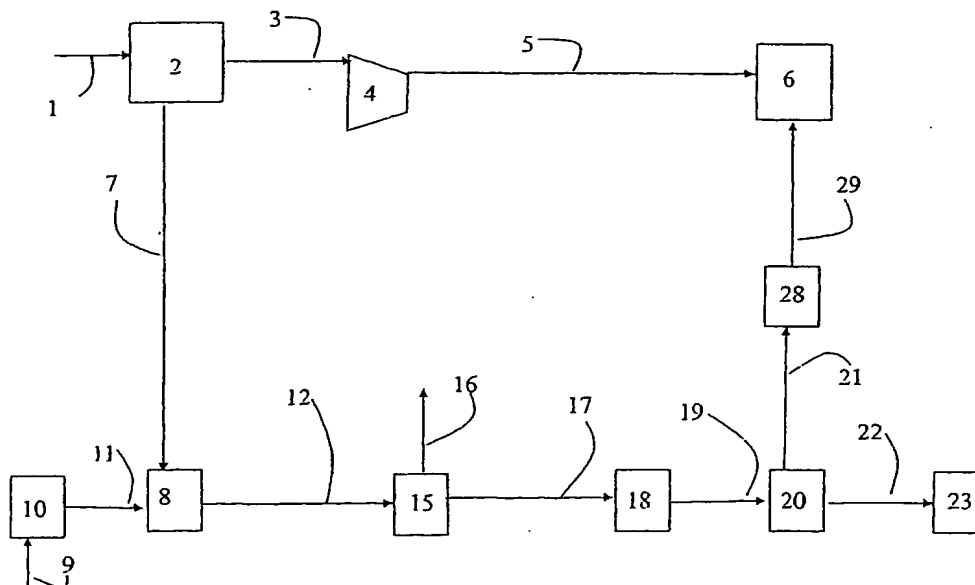
PCT

(10) International Publication Number
WO 2004/055323 A1

- (51) International Patent Classification⁷: **E21B 43/16** N-7500 Stjødal (NO). STENSEN, Jan, Åge [NO/NO]; Rogneveien 10, N-7021 Trondheim (NO).
- (21) International Application Number: **PCT/NO2003/000416** (74) Agent: **PROTECTOR IP CONSULTANTS AS**; P.O.Box 5074 Majorstuen, N-0301 Oslo (NO).
- (22) International Filing Date: **12 December 2003 (12.12.2003)** (81) Designated States (*national*): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, EG, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK (utility model), SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (25) Filing Language: **English**
- (26) Publication Language: **English**
- (30) Priority Data: **2002 6021 13 December 2002 (13.12.2002) NO**
- (71) Applicant (*for all designated States except US*): **STATOIL ASA** [NO/NO]; I & K IR PAT, Forusbeen 50, N-4035 Stavanger (NO).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): **OLSVIK, Ola** [NO/NO]; Haukveien 18, N-7562 Hundhamaren (NO). **RYTTER, Erling** [NO/NO]; Steinåsen 19, N-7049 Trondheim (NO). **SOGGE, Jostein** [NO/NO]; Måneveien 5,
- (84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: **A PLANT AND A METHOD FOR INCREASED OIL RECOVERY**



(57) Abstract: A method for increasing oil recovery from an oil reservoir by injection of gas into the reservoir, is described. The method comprises separation of air into an oxygen-rich fraction and a nitrogen-rich fraction, reformation of natural gas together with oxygen to produce a synthesis gas for production of methanol or other oxygenated hydrocarbons or higher hydrocarbons. The raw synthesis products and a waste gas from the synthesis are separated, and the nitrogen-rich fraction and at least a part of the waste gas are injected into the oil reservoir to increase the oil recovery from the reservoir. A plant for performing the method is also described.

WO 2004/055323 A1

COPY

LU, MC, NL, PT, RO, SE, SI, SK, TR). OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Declaration under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT,

Published:

- with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.